

CLAIMS

WHAT IS CLAIMED IS:

1. An image sensor package comprising:  
5 a transparent substrate comprising a base surface  
and a pocket sidewall;  
a trace coupled to said base surface;  
an image sensor comprising a first surface  
comprising an active area and a bond pad; and  
10 a bump coupling said bond pad to said trace, wherein  
said image sensor is located within an image sensor  
pocket of said transparent substrate defined by said base  
surface and said pocket sidewall.

15 2. The image sensor package of Claim 1 wherein said  
transparent substrate further comprises a rear surface,  
said pocket sidewall extending between said base surface  
and said rear surface, wherein said trace extends from  
said base surface, along said pocket sidewall, and to  
20 said rear surface.

3. The image sensor package of Claim 2 wherein said  
trace comprises:  
a first portion extending along said base surface to  
25 said pocket sidewall;  
a second portion extending along said pocket  
sidewall from said base surface to said rear surface; and  
a third portion extending along said rear surface.

30 4. The image sensor package of Claim 3 wherein said  
first portion, said second portion, and said third  
portion are integral.

5. The image sensor package of Claim 3 further  
35 comprising an interconnection ball coupled to said third  
portion.

6. The image sensor package of Claim 3 further

comprising a pad coupled to said third portion.

7. The image sensor package of Claim 2 wherein said image sensor is entirely within said image sensor pocket.

8. The image sensor package of Claim 7 wherein said image sensor comprises a second surface below said rear surface of said transparent substrate.

9. The image sensor package of Claim 2 wherein said image sensor comprises a second surface coplanar with said rear surface of said transparent substrate.

10. The image sensor package of Claim 2 wherein said image sensor comprises a second surface above said rear surface of said transparent substrate.

11. The image sensor package of Claim 1 further comprising a bead forming a seal between a periphery of said image sensor and said base surface.

12. The image sensor package of Claim 11 wherein said image sensor, said bead, and said base surface define a cavity, said active area being located within said cavity.

13. The image sensor package of Claim 1 further comprising an underfill filling a region between said first surface of said image sensor and said base surface.

14. The image sensor package of Claim 13 wherein said underfill contacts and protects said active area.

15. An image sensor package comprising:  
a transparent substrate comprising a rear surface and a front surface;  
a rear trace coupled to said rear surface;  
a front trace coupled to said front surface;

a via extending from said rear surface to said front surface and electrically coupling said rear trace to said front trace;

an image sensor comprising a first surface  
5 comprising an active area and a bond pad;

a bump coupling said bond pad to said rear trace;

a bead forming a seal between a periphery of said image sensor and said rear surface; and

a package body enclosing said bead and a side of  
10 said image sensor.

16. A method comprising:

forming an image sensor pocket in a transparent substrate;

15 forming a trace coupled to said transparent substrate; and

coupling a bond pad on a first surface of an image sensor to said trace, wherein said image sensor is located within said image sensor pocket.

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17. The method of Claim 16 wherein said forming an image sensor pocket comprises etching said transparent substrate.

25 18. The method of Claim 16 wherein said image sensor pocket is defined by a base surface and a pocket sidewall of said transparent substrate, said pocket sidewall extending between said base surface and a rear surface of said transparent substrate.

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19. The method of Claim 18 wherein said trace comprises:

a first portion extending along said base surface to said pocket sidewall;

35 a second portion extending along said pocket sidewall from said base surface to said rear surface; and

a third portion extending along said rear surface.

20. The method of Claim 13 further comprising forming an underfill between said first surface of said image sensor and said base surface.

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